REMARKS

This amendment is responsive to the Office Action dated December 15, 2004. Applicants have amended claims 1, 3, 4, 6, 7, 9, 11-14, 16, 24, 26, 27, 32, 34, 42-44, 47, 55, 58, 63, 65-67, 71, 73, 78 and 81-85. Claims 1-85 remain pending.

Claim Rejection Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-14, 16-30, 32-45, 47-61, 63-79, and 81-83 under 35 U.S.C. 102(e) as being anticipated by Wilford et al. (USPN 6,687,247). Applicants respectfully traverse the rejection. Wilford fails to disclose each and every feature of the claimed invention, as required by 35 U.S.C. 102(e), and provides no teaching that would have suggested the desirability of modification to include such features.

Applicants have amended claim 1 to clarify that the packet forwarding functionality is centralized within a router module separate from the interface modules. For example, claim 1, as amended, recites a plurality of interface modules to communicate data packets using a network, and a router module coupled to each of the plurality of interface modules. Claim 1 further requires that the router module receive the data packets from the plurality of interface modules and forward the data packets between the interface modules in accordance with route information associated with the network. In this manner, amended claim 1 requires that the router module provide routing functions for packets received from a plurality of different interface modules.

With regard to the elements of claim 1, the Examiner stated that Wilford discloses "a routing communication device, which consists plurality [sic] of interfaces in the communication system." In addition, the Examiner stated that Wilford discloses "information is pass [sic] from the one of the set input interfaces and forward [sic] on to one of a set of output interfaces (plurality of interfaces)."

The Examiner is generally correct in noting that Wilford discloses a routing device with a plurality of network interfaces. However, Wilford describes a routing communication device organized as a set of line cards, and that each line card contains internal routing and packet forwarding functions. In other words, Wilford describes a routing device in which routing functions are performed locally within each of the line cards.

For example, at col. 1, ll. 51-55, Wilford states that each line card includes a control element that consists of an inbound packet receiver to receive packets from the physical medium of the network and a lookup circuit to route the packets. In reference to the control element of each line card, Wilford states:

> *The inbound packet receiver 140 operates in conjunction with lookup circuit 145 to determine routing treatments for inbound packets 113 [received from the physical medium of the network]. Lookup circuit 145 includes routing treatment information disposed in a memory data structure. ... These routing treatments can include one or more of the following: a) selection of one or more output interfaces to which to forward inbound packets 113 responsive to the destination device, to the source and destination device, or to any other packet header information; ...*[1]

Moreover, FIG. 2 of Wilford is a "high-level schematic of line card control element 130." FIG. 2 illustrates the line card control element as including a lookup circuit 225. Wilford describes the line card lookup circuit as follows:

> *Lookup circuit 225, operating in conjunction with lookup memory 227, does a destination routing lookup and a source address lookup, in one embodiment by means well-known in the art. Policy and precedence mapping rules, themselves well-known in the art, are all executed against the packet at this time. Routing information is provided as a set of outputs from lookup circuit 225 to inbound receiver 220 and to rate limiter 230.*[2]

Thus, Wilford makes clear that each line card requires an internal control element that performs routing functions for the packets received from the network by that particular line card.

Thus, Wilford fails to teach or suggest a plurality of interface modules to communicate data packets using a network, and a router module coupled to each of the plurality of interface modules, as required by Applicants' claim 1. Moreover, Wilford fails to teach or suggest a router module that receives the data packets from the plurality of interface modules and forwards the data packets between the interface modules in accordance with route information associated with the network. These elements make clear that the routing module of Applicants' claim 1 provides routing functions for data packets received from different interface modules. In contrast, in the Wilford routing device, each line card requires an internal control element that performs routing functions for the packets received from the network by that particular line card. Using a separate routing module to provide routing functions for data packets arriving from

[1] Col. 1, ln. 60 – col. 2, ln. 5.
[2] Col. 5, ll.23-30.

different interfaces modules, as required by claim 1, represents a fundamental difference from Wilford.

Independent claim 16, as amended, requires a router module comprising a packet processing circuit, a memory management circuit, and a route lookup circuit integrated into a single module separate from a plurality of interface cards. Similarly, claims 32 and 47 require a router module separate from the plurality of interface modules to process data packets and to forward the data packets between a plurality of interface modules. Claims 81 through 83 contain similar elements. Independent claim 63 requires a router comprising one hardware board integrally housing an interface concentrator that provides electrical interfaces to receive incoming packets from a plurality of interface cards, a packet processing circuit, a memory management circuit, and a route lookup circuit to select routes for the incoming packets received from the plurality of interface cards.

As described above, each line card of the Wilford routing device requires an internal control element that performs routing functions only for packets received from the network by that particular line card. Thus, Wilford fails to teach or suggest a router module separate from the plurality of interface modules to process data packets and to forward the data packets between the interface modules, as required by claim 16. Further, Wilford fails to teach or suggest a router module comprising a packet processing circuit, a memory management circuit, and a route lookup circuit integrated into a single module separate from a plurality of interface cards, as required by independent claims 32 and 47. Similarly, Wilford fails to teach or suggest a router comprising one hardware board integrally housing an interface concentrator that provides electrical interfaces to receive incoming packets from a plurality of interface cards, a packet processing circuit, a memory management circuit, and a route lookup circuit to select routes for the incoming packets, as required by independent claim 63.

For at least these reasons, Wiford fails to teach or suggest providing a plurality of interface modules to communicate data packets using a network, and coupling the plurality of interface modules to a single router module to process the data packets and to forward the data packets between the interface modules, as required by independent claim 71.

With regard to the elements of dependent claim 2, 33, and 72, the Examiner stated that Wilford "discloses a fabric interface (midplane), which coupled [sic] to many interfaces" and

cites Wilford at col. 1, lines 32-33. However, as described above, this passage of Wilford describes a "set of line cards and a switching fabric." Contrary to the Examiner's assertion, Wilford makes no mention of a routing device comprising a midplane coupled to the plurality of interface modules and to the router module that forwards packets received from the different interface modules in accordance with routing information, as required by Applicants' claim 2. Rather, the switching fabric of Wilford connects line card to line card, and each line card includes an internal control element that performs routing functions only for that packets received from the network by that particular line card. Hence, Wilford does not teach or suggest the requirements of claims 2, 33 and 72.

With regard to claim 3, as amended, Wilford fails to teach or suggest a concentrator module coupled between the packet forwarding engine and the plurality of interface modules, wherein that packet forwarding engine receives the packets from the plurality of interface modules by the concentrator module, selects routes for the packets and forwards the packets to the plurality of interface modules via the concentrator module. As described above, each line card of the Wilford routing device requires an internal control element that performs routing functions for the packets received from the network by that particular line card. Thus, Wilford fails to teach or suggest a packet forwarding engine that provides routing functions for data packets received from different interface modules via an interface concentrator, as required by claim 3.

Moreover, with respect to claims 3, 34, and 73, as amended, Wilford fails to teach or suggest a packet forwarding engine and a concentrator module integrated into a single unit separate from the interface modules.

With regard to claims 4, 35, and 74, the Examiner stated that "Wilford discloses . . . a memory controller (memory management circuit) or a Queue manager (memory management circuit)." The Examiner is correct in noting that Wilford routing device includes a queue manager. However, Wilford does not disclose or suggest a memory management circuit that provides data to a concentrator that is separate from a plurality of interface modules, as required by Applicant's claims 4, 35 and 74.

With regard to dependent claims 11, 24, 55, 67 and 78, Wilford fails to teach or suggest a packet forwarding module that selects routes by referencing a forwarding table, wherein the

forwarding table stores route information for forwarding data packets received from any the plurality of interface modules. As described above, each line card of the Wilford router includes an internal control element that performs routing functions only for packets received from the network by that particular line card. In other words, in Wilford, the control element for each line card merely makes forwarding decisions for packets received from the network by that line card. Packets received from other line cards are not routed, merely output on the network. Thus, Wilford does not teach or suggest a packet forwarding engine that selects routes to forward packets using a forwarding table that stores route information for forwarding data packets received from any of the different interface modules.

In order to support an anticipation rejection under 35 U.S.C. 102(e), it is well established that a prior art reference must disclose each and every element of a claim.[3] Wilford fails to disclose each and every limitation set forth in claims 1-14, 16-30, 32-45, 47-61, 63-79, and 81-83. For at least these reasons, Wilford fails to establish a prima facie case for anticipation under 35 U.S.C. 102(e). Withdrawal of this rejection is requested.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 15, 31, 46, 62, 80, 84 and 85 under 35 U.S.C. 103(a) as being unpatentable over Wilford in view of Zadikian et al. (USPN 6,724,757). Applicants respectfully traverse the rejection. Wilford and Zadikian fail to disclose or suggest the inventions defined by Applicants' claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

In general, Zadikian fails to overcome the deficiencies of Wilford. For example, similar to Wilford, Zadikian describes a router having a plurality of line cards coupled via a switch matrix. Zadikian makes clear that the line cards of the described router perform route selection and forwarding functions:

> *The line card terminates an input signal from one of the other nodes in the network. For example, in a SONET-based implementation, a single SONET/SDH OC-48 signal is terminated by an a line card, although other signal levels (OC-192, OC-12, and so on) may be supported. In one embodiment, the software consists of two threads, one that runs in the background and is responsible for non-time critical tasks. The other*

[3] *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986) ("it is axiomatic that for prior art to anticipate under 102 it has to meet every element of the claimed invention").

> *thread, which runs at the interrupt level, is responsible for all real-time aspects of the software, including limited overhead processing, alarm detection and forwarding, and fault detection and recovery. The line card processor maintains a copy of its firmware and startup code onboard.*[4]

In regard to claims 15, 31, 46, 62, and 80, the Examiner correctly recognized that Wilford fails to teach or suggest a redundant router module to process the data packets and to forward the data packets between the interface modules in response to malfunction of the router module. Similarly, with respect to claims 84 and 85, the Examiner correctly recognized that Wilford fails to teach or suggest a switch arrangement coupled to the plurality of routing devices and configured to switch control from a first routing device to a second routing device. However, the Examiner suggests that it would have been obvious to modify the Wilford routing device in view of the Zadikian to include a redundant router module.

Applicants respectfully point out that even if modified as suggested by the Examiner, Applicants' claimed invention would not be achieved. For example, both Wilford and Zadikian describes routers in which each line card requires an internal control element that performs routing functions for only those packets received from the network by that particular line card. Thus, as Zadikian makes clear, redundancy is accomplished by utilizing groups of redundant line cards.[5] For example, Zadikian states "[p]referably, the group matrix is a 2:1 reduction stage that selects output signals from one of two line cards."[6] In fact, this point illustrates one of the many fundamental differences between Applicants' claimed invention and the applied references. The Wilford and Zadikian routers require localized routing functions within each line card, and redundancy can only be achieved with the addition of multiple line cards.

Neither Wilford nor Zadikian describe a separate router module capable of forwarding data packets received from any of the plurality of interface modules. As result, neither the Wilford routing device nor the Zadikian routing device is capable of being modified to include a redundant router module capable of providing similar functionality.

For at least these reasons, the Examiner has failed to establish a prima facie case for non-patentability of Applicants' claims 15, 31, 46, 62, 80, 84 and 85 under 35 U.S.C. 103(a). Withdrawal of this rejection is requested.

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[4] Col. 21, ll.50-62 (emphasis added).
[5] See, e.g., cols. 6-8.
[6] Col. 8, ll. 21-23.

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CONCLUSION

All claims in this application are in condition for allowance. Applicants respectfully request reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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